Comparing stratigraphic and tectonic data from eastern margin of the Bohemian Massif the end of thrusting is dated to latest Westphalian–early Stephanian.

Alpine-style tectonic model (Čížek and Tomek 1991) explains the origin of laminated limestones. They are the result of tectonic processes, which transform limestones of different types and ages into special tectonic facies imitating sedimentary lamination. The study was supported in part by grant project MSM0021622412 and grant FRVŠ 1950/2005.

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Complex History of the Lithospheric Mantle Beneath the Western Pannonian Basin

György FALUS[1], Csaba SZABÓ[2], István KOVÁCS[2] and Zoltán ZAJACZ[3]

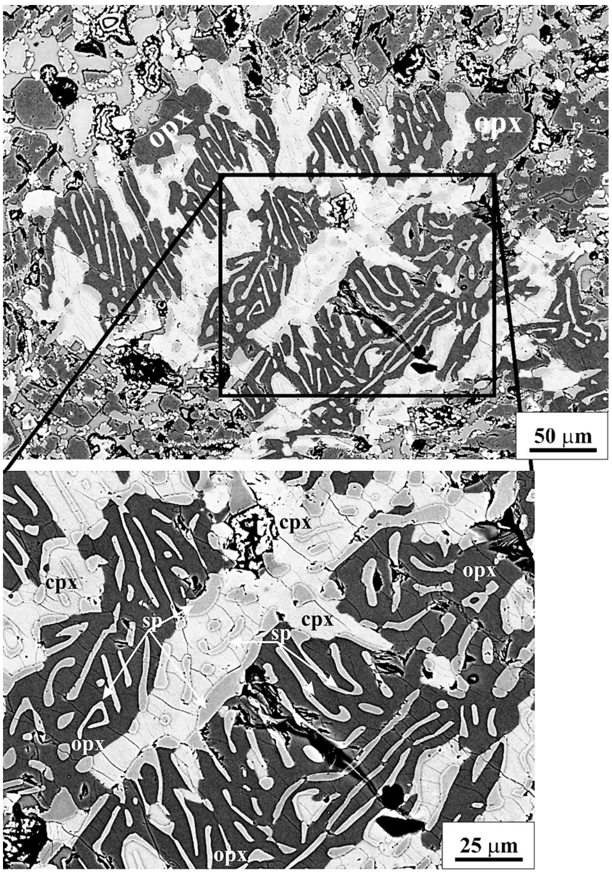
[1] Eötvös Loránd Geophysical Institute of Hungary, Columbus u. 17-23, 1145 Budapest, Hungary
[2] Department of Petrology and Geochemistry, Eötvös University, Budapest, Pázmány P. sétány 1/c, 1117 Budapest, Hungary
[3] Department Isotope Geochemistry and Mineral Resources, ETH Zürich, CH-8092 Zürich, Switzerland

Pyroxene-spinel symplectites in 6 samples from the Little Hungarian Plain xenoliths have been found and studied in detail. The symplectites are composed of orthopyroxene, which constitutes the mass of the mineral assemblage, whereas spinel and clinopyroxene are subordinate (Fig. 1). The occurrence of this specific mineral assemblage shows a continuous variance with respect to partial melting and recrystallization. The most pristine symplectites are characterized by fine-grained orthopyroxene aggregates and vermicular spinels in intimate textural relation with elongated clinopyroxenes.

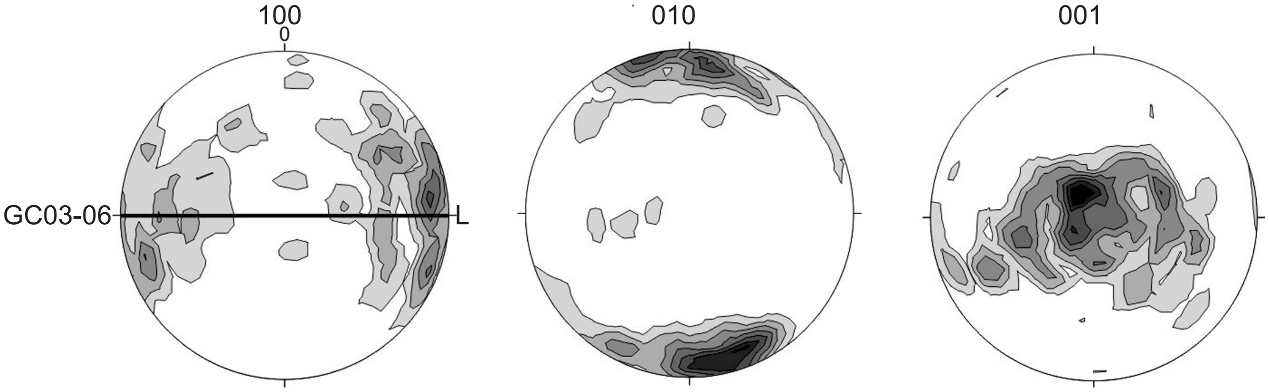
Melting of the symplectites occurs with synchronous precipitation of isometric, euhedral olivine grain shapes. The vermicular spinels, probably due to the reaction with the infiltrating melts are surrounded by very fine-grained, isometric spinel crystals. At the final stages of the reaction orthopyroxenes vanish and melt is observed instead together with the precipitated olivines, indicating that a reaction of

orthopyroxene + Si-poor melt = olivine + Si-rich melt

occurred. The xenoliths that host these symplectites are porphyroclastic displaying specific olivine orientation patterns (Fig. 2). Some of the larger orthopyroxene and clinopyroxene porphy-



■ **Fig. 1.** Pyroxene spinel symplectite with breakdown products and an enlarged image of the symplectite itself. Intimate intergowth of clinopyroxene and spinels can also be observed. Porphyroclastic spinel lherzolite from the LHPVF (GC03-03), opx orthopyroxene; cpx clinopyroxene; sp spinel. SEM image.



■ **Fig. 2.** Stereograms of olivine orientations in the xenoliths containing pyroxene-spinel symplectites from the LHPVF. 100 grains were analyzed. Note intermediate maximum of [100]axes and high maximums for [010] and [001]. Note marked girdle of (100) and (001) in foliation plane. Horizontal line denotes orientation of macroscopic foliation or compositional banding; L macroscopic lineation. Lower hemisphere, equal area projection. Data contoured at 1, 2, 3,... times uniform distribution.

roclasts contain exsolution lamellae of clinopyroxene and orthopyroxene, respectively. Clinopyroxene porphyroclasts also frequently contain spinel lamellae.

Orthopyroxenes and clinopyroxenes in the symplectite show higher MgO, FeO and CaO and lower Al_2O_3 contents than the cores of the porphyroclasts and they resemble the compositions of porphyroclast rims and neoblasts. Spinels in the symplectite are extremely rich in Al_2O_3 compared to host rock spinels, whereas their Cr_2O_3 content is significantly lower than that of the host rock spinels.

Mass balance calculation of the most pristine symplectites was carried out using NIH Image – on SEM images and the geochemical compositions gained from EPMA analysis. The calculation indicates that the symplectites are former garnets with high (~70 mol%) pyrope contents. However, trace element patterns of the mineral phases in the symplectite and the host mineral phases do not show any trace of garnet signature

The mutual application of calculated garnet compositions and recalculated orthopyroxene and clinopyroxene compositions (reentening exsolution lamellae), applying the method of Falus et al. (2000) can be used to calculate pressure and temperature conditions (Nickel and Green 1985) where these phases (garnet, homogeneous ortho- and clinopyroxene) were stable together.

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Structure of the Lithosphere in the West-Pannonian Basin, Based on CELEBRATION 2000 3D Seismic Data and Mantle Xenoliths

Tamás FANCSIK[1], György FALUS[1], Endre HEGEDŰS[1], G. Randy KELLER[2], János KISS[1], Attila Csaba KOVÁCS[1] and István TÖRÖK[1]

[1] Eötvös Loránd Geophysical Institute of Hungary, Columbus u. 17-23, 1145 Budapest, Hungary
[2] University of Texas at El Paso, 500 W. University Ave. El Paso, TX 79902, USA

Geophysical and geochemical research in the Pannonian Basin has provided several new results in the last decades. These achievements offer a complex and systematic opportunity to refine the basin structure and to more clearly understand some major steps in the formation and evolution of the region. This paper deals mainly with the regional tectonic zones and geological units, which determine the major structural architecture of the Pannonian Basin.

One of the most significant database regarding the Pannonian Basin is the dataset of the CELEBRATION 2000 project. This 3-D deep seismic experiment was carried out in Central-Europe including a part of the Pannonian Basin. Using the emerged database a 3-D seismic tomographic inversion of the whole crust can be achieved.

Potential field geophysical methods, although with restricted penetration depth, may also carry significant geological informa-